

LISTING OF THE CLAIMS (1-22)

Claim 1 (currently amended): A die pad of a leadframe, the die pad having four slots that penetrate the die pad to define a restrictive region having four corners respectively corresponding to the slots such that each slot extends laterally around the corresponding corner ~~substantially~~ outside where the die pad receives a die and such that solder paste for connecting the die to the die pad is substantially restricted to the restrictive region.

Claim 2 (previously amended): A die pad as in Claim 1 wherein the restrictive region and the die are of approximately identical lateral areas.

Claims 3-4 (cancelled)

Claim 5 (currently amended): A leadframe comprising a plurality of die pads and a plurality of pins, each die pad having four slots which penetrate that die pad to define a restrictive region having four corners respectively corresponding to the slots such that each slot extends laterally around the corresponding corner ~~substantially~~ outside where that die pad receives a die and such that solder paste for connecting the die to that die pad is substantially restricted to the restrictive region.

Claim 6 (previously presented): A leadframe as in Claim 5 wherein each restrictive region and the die connected to that restrictive region are of approximately identical lateral areas.

Claim 7 (currently amended): A structure comprising:
a die;

a die pad of a leadframe, the die pad having four slots that penetrate the die pad to define a restrictive region having four corners respectively corresponding to the slots, the die connected to the die pad ~~substantially~~ within the restrictive region, each slot extending laterally around the corresponding corner ~~substantially~~ outside where the die pad receives the die; and

solder paste for connecting the die to the die pad such that the solder paste is restricted to the restrictive region.

Claim 8 (previously presented): A structure as in Claim 7 wherein the restrictive region and the die are of approximately identical lateral areas.

Claim 9 (currently amended): A die pad having:

a die location for receiving a die, the die location laterally matching the die and having four corners; and

a plurality of slots that penetrate the die pad to define a restrictive region such that solder paste for connecting the die to the die pad ~~substantially~~ within the restrictive region is substantially restricted to the restrictive region, one of the slots extending around one of the corners of the die location ~~substantially~~ outside the die location.

Claim 10 (currently amended): A die pad as in Claim 9 wherein another of the slots extends around another of the corners of the die location ~~substantially~~ outside the die location.

Claim 11 (currently amended): A leadframe comprising a plurality of die pads and a plurality of pins, each die pad having:

a die location for receiving a die, the die location laterally matching the die and having four corners; and

a plurality of slots that penetrate that die pad to define a restrictive region such that solder paste for connecting the die to that die pad ~~substantially~~ within the restrictive region is substantially restricted to the restrictive region, one of the slots extending laterally around one of the corners of the die location ~~substantially~~ outside the die location.

Claim 12 (currently amended): A leadframe as in Claim 11 wherein another of the slots in each die pad extends around another of the corners of that die pad's die location ~~substantially~~ outside that die pad's die location.

Claim 13 (currently amended): A structure comprising:
a die;

a die pad having (a) a die location for receiving the die, the die location matching the die and having four corners, and (b) a plurality of slots the penetrate the die pad to define a restrictive region, one of the slots extending laterally around one of the corners of the die location ~~substantially~~ outside the die location; and

solder paste for connecting the die to the die pad ~~substantially~~ within the restrictive region such that the solder paste is substantially restricted to the restrictive region.

Claim 14 (currently amended): A structure as in Claim 13 wherein another of the slots extends around another of the corners of the die location ~~substantially~~ outside the die location.

Claim 15 (previously added): A structure as in Claim 14 wherein the two corners around which two of the slots respectively extend are adjacent corners of the die location.

Claim 16 (previously added): A structure as in Claim 14 wherein the two corners around which two of the slots respectively extend are opposite corners of the die location.

Claim 17 (currently amended): A method comprising:

providing a die pad of a leadframe with four slots that penetrate the die pad to define a restrictive region having four corners respectively corresponding to the slots; and providing solder paste between the restrictive region and a die for connecting the die to the die pad such that each slot extends laterally around the corresponding corner substantially outside where the die pad receives the die and such that the solder paste is substantially restricted to the restrictive region.

Claim 18 (previously added): A method as in Claim 17 wherein the restrictive region and the die are of approximately identical lateral areas.

Claim 19 (currently amended): A method comprising:

providing a die pad with a plurality of slots that penetrate the die pad to define a restrictive region; and

providing solder paste between the restrictive region and a die for connecting the die to the die pad at a die location substantially within the restrictive region such that the die location laterally matches the die and has four corners, such that one of the slots extends laterally around one of the corners of the die location substantially outside the die location, and such that the solder paste is substantially restricted to the restrictive region.

Claim 20 (currently amended): A method as in Claim 19 wherein another of the slots extends around another of the corners of the die location substantially outside the die location.

Claim 21 (previously presented): A method as in Claim 20 wherein the two corners around which two of the slots respectively extend are adjacent corners of the die location.

Claim 22 (previously presented): A method as in Claim 20 wherein the two corners around which two of the slots respectively extend are opposite corners of the die location.

REMARKS

The rejections and comments of the Examiner set forth in the Office Action dated July 30, 2003 have been carefully reviewed by the Applicants. Pending Claims 1, 2, and 5-22 are currently rejected. In response, the Applicants have amended the Claims.

Claims 1-2, and 5-22 are currently rejected under 35 U.S.C. 103(a) as being unpatentable over Park et al. (US 5847446) in view of Fujita et al. (US 5844306). In response, the Applicants have amended Claims 1, 2, 5, 7, 9-14, 17, 19, and 20 to clearly distinguish Claims 1-2 and 5-22 from the combination of Park and Fujita. Specifically, the phrases "substantially within" and "substantially outside" have been respectively replaced by the more definitive "within" and "outside." The adjective "substantially" is no longer used in describing the location of the slots. The slots as recited in the amended claims are distinguished from the slots of Park and Fujita in that they do not extend underneath the die, or into the die placement area.

Park is directed to a chip attach pad having perimeter slots that extend underneath the die placement area. The purpose of the slots as taught by Park, is to provide an opening underneath the die so that the molding compound may establish contact with the bottom of the die (column 3, lines 39-67). In the context of Park, the slots must extend underneath the die in order to serve their intended purpose. In contrast, the slots of the present claimed invention do not extend under the die placement area.

Serial No.: 09/978,603

Examiner: MANDALA, V.A.
Art Unit: 2826

Park has been relied upon as teaching a plurality of slots defining a restrictive area. Not only does Park fail to teach a plurality of slots defining a restrictive area that is equal to or larger than the die, modification of Park to produce the present invention renders the invention of Park unsuited for its intended purpose, that is, establishing contact between the molding compound and the bottom of the die.

Fujita also teaches slots have an opening that extends under the die to serve their intended purpose (preventing solder scattering). Thus Fujita fails to remedy the defect of Park.

Fujita and Park teach slots that extend underneath a die, whereas the slots as disclosed and claimed in the present invention (in accordance with the present amendment) do not extend underneath a die. In summary, Applicants assert that Claims 1-2 and 5-22 are now in condition for allowance and earnestly solicit such action by the Examiner.

Please charge any additional fees or apply any credits to our PTO deposit account number: 23-0085.

Serial No.: 09/978,603

Examiner: MANDALA, V.A.
Art Unit: 2826

Respectfully submitted,

WAGNER, MURABITO & HAO

Date: October 24, 2003



Mehlin Dean Matthews

Registration Number: 46,127

WAGNER, MURABITO & HAO

Two North Market Street

Third Floor

San Jose, CA 95113

408-938-9060

Serial No.: 09/978,603

Examiner: MANDALA, V.A.

Art Unit: 2826